

***FlyBy Math™* Alignment**
Sunshine State Standards, Benchmarks, and Grade Level Expectations
Mathematics

Strand A. Number Sense, Concepts, and Operations

Standard 3:

The student understands the effects of operations on numbers and the relationships among these operations, selects appropriate operations, and computes for problem solving.

Benchmark MA.A.3.3.2: The student selects the appropriate operation to solve problems involving addition, subtraction, multiplication, and division of rational numbers, ratios, proportions, and percents, including the appropriate application of the algebraic order of operations.

Grade Level Expectations: Sixth

The student:

2. solves real-world problems involving whole numbers, fractions, decimals, and common percents using one or two-step problems.

4. knows proportional relationships and describes such relationships in words, tables, or graphs.

***FlyBy Math™* Activities**

--Apply mathematics to solving distance, rate, and time problems for aircraft conflict scenarios.

--Use graphs to compare airspace scenarios for both the same and different starting conditions and the same and different constant (fixed) rates.

Grade Level Expectations: Seventh

The student:

2. solves real-world problems involving decimals and fractions using two- or three-step problems.

5. knows proportional relationships and uses tables, graphs or "constant ratio" relationships to solve and explain problems.

***FlyBy Math™* Activities**

--Apply mathematics to solving distance, rate, and time problems for aircraft conflict scenarios.

--Use graphs to compare airspace scenarios for both the same and different starting conditions and the same and different constant (fixed) rates.

Grade Level Expectations: Eighth

The student:

2. solves real-world problems involving integers, ratios, proportions, numbers expressed as percents, decimals and fractions in two- or three-step problems.

***FlyBy Math™* Activities**

--Apply mathematics to solving distance, rate, and time problems for aircraft conflict scenarios.

Benchmark MA.A.3.3.3: The student adds, subtracts, multiplies, and divides whole numbers, decimals, and fractions, including mixed numbers, to solve real-world problems, using appropriate methods of computing, such as mental mathematics, paper and pencil, and calculator.

Grade Level Expectations: Sixth

The student:

1. solves one- or two-step real-world problems involving whole numbers and decimals using appropriate methods of computation (for example, mental computation, paper and pencil, and calculator).

***FlyBy Math™* Activities**

--Apply mathematics to solving distance, rate, and time problems for aircraft conflict scenarios.

Grade Level Expectations: Seventh

The student:

1. solves multi-step real-world problems involving whole numbers, fractions or decimals using appropriate methods of computation, such as mental computation, paper and pencil, and calculator.

***FlyBy Math™* Activities**

--Apply mathematics to solving distance, rate, and time problems for aircraft conflict scenarios.

Grade Level Expectations: Eighth

The student:

1. solves multi-step real-world problems involving fractions, decimals, and integers using appropriate methods of computation, such as mental computation, paper and pencil, and calculator.

***FlyBy Math™* Activities**

--Apply mathematics to solving distance, rate, and time problems for aircraft conflict scenarios.

Standard 4: The student uses estimation in problem solving and computation.

Benchmark MA.A.4.3.1: The student uses estimation strategies to predict results and to check the reasonableness of results.

Grade Level Expectations: Sixth

The student:

2. estimates to predict results and to check reasonableness of results.

***FlyBy Math™* Activities**

--Predict outcomes and explain results of mathematical models and experiments.

Grade Level Expectations: Seventh

The student:

2. estimates to predict results and to check reasonableness of results.

***FlyBy Math™* Activities**

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The student:

2. estimates to predict results and to check reasonableness of results.

***FlyBy Math™* Activities**

--Predict outcomes and explain results of mathematical models and experiments.

Strand B. Measurement

Standard 1:

The student measures quantities in the real world and uses the measures to solve problems.

Benchmark MA.B.1.3.2: The student uses concrete and graphic models to derive formulas for finding rates, distance, time, and angle measures.

Grade Level Expectations: Seventh

The student:

2. develops and uses the distance formula in solving real world problems ($d=rt$)

FlyBy Math™ Activities

--Apply mathematics to solving distance, rate, and time problems for aircraft conflict scenarios.

--Use the distance-rate-time formula to predict and analyze aircraft conflicts.

Grade Level Expectations: Eighth

The student:

1. applies formulas for finding rates, distance, time and angle measures.
2. describes and uses rates of change (for example, temperature as it changes throughout the day, or speed as the rate of change in distance over time) and other derived measures.

FlyBy Math™ Activities

--Apply mathematics to solving distance, rate, and time problems for aircraft conflict scenarios.

--Use the distance-rate-time formula to predict and analyze aircraft conflicts.

Benchmark MA.B.1.3.4: The student constructs, interprets, and uses scale drawings such as those based on number lines and maps to solve real-world problems.

Grade Level Expectations: Sixth

The student:

2. uses scale drawings to solve real-world problems including distance (as in map reading).

FlyBy Math™ Activities

--Plot points on a schematic of a jet route, on a vertical line graph, and on a Cartesian coordinate system to describe the motion of two airplanes.

Standard 2: The student compares, contrasts, and converts within systems of measurement (both standard/nonstandard and metric/customary).

Benchmark MA.B.2.3.1: The student uses direct (measured) and indirect (not measured) measures to compare a given characteristic in either metric or customary units.

Grade Level Expectations: Sixth

The student:

2. measures length, weight or mass, and capacity using appropriate measuring instruments.

FlyBy Math™ Activities

--Calculate and measure the position and time of simulated aircraft. Represent that motion using tables, graphs, equations, and experimentation.

Grade Level Expectations: Seventh

The student:

1. measures length, weight or mass, and capacity or volume using customary or metric units.

FlyBy Math™ Activities

--Calculate and measure the position and time of simulated aircraft. Represent that motion using tables, graphs, equations, and experimentation.

Standard 3: The student estimates measurements in real-world problem situations.

Benchmark MA.B.3.3.1: The student solves real-world and mathematical problems involving estimates of measurements including length, time, weight/mass, temperature, money, perimeter, area, and volume, in either customary or metric units.

<p>Grade Level Expectations: Sixth The student:</p> <ol style="list-style-type: none"> estimates solutions to real-world problems by estimating the length, volume or capacity, weight or mass, perimeter, or area of objects or shapes in either customary or metric units. estimates solutions to real-world problems involving measurement, including estimates of time, temperature and money. 	<p>FlyBy Math™ Activities</p> <ul style="list-style-type: none"> --Calculate and measure the position and time of simulated aircraft. Represent that motion using tables, graphs, equations, and experimentation. --Predict outcomes and explain results of mathematical models and experiments. --Predict the relative motion of two airplanes on given paths.
<p>Grade Level Expectations: Seventh The student:</p> <ol style="list-style-type: none"> estimates solutions to real-world problems by estimating the length, volume or capacity, weight or mass, perimeter, or area of objects or shapes in either customary or metric units. estimates solutions to real-world problems involving measurement, including estimates of time, temperature and money. 	<p>FlyBy Math™ Activities</p> <ul style="list-style-type: none"> --Calculate and measure the position and time of simulated aircraft. Represent that motion using tables, graphs, equations, and experimentation. --Predict outcomes and explain results of mathematical models and experiments. --Predict the relative motion of two airplanes on given paths.
<p>Grade Level Expectations: Eighth The student:</p> <ol style="list-style-type: none"> knows a variety of strategies to estimate, describe, make comparisons, and solve real-world and mathematical problems involving measurements. 	<p>FlyBy Math™ Activities</p> <ul style="list-style-type: none"> --Calculate and measure the position and time of simulated aircraft. Represent that motion using tables, graphs, equations, and experimentation. --Predict outcomes and explain results of mathematical models and experiments. --Predict the relative motion of two airplanes on given paths.

Strand C. Geometry and Spatial Sense

Standard 3: The student uses coordinate geometry to locate objects in both two- and three-dimensions and to describe objects algebraically.

Benchmark MA.C.3.3.2: The student identifies and plots ordered pairs in all four quadrants of a rectangular coordinate system (graph) and applies simple properties of lines.

Grade Level Expectations: Sixth

The student:

2. plots specific points in the first quadrant of the Cartesian coordinate system.

FlyBy Math™ Activities

--Plot points on a schematic of a jet route, on a vertical line graph, and on a Cartesian coordinate system to describe the motion of two airplanes.

Grade Level Expectations: Eighth

The student:

1. given an equation or its graph, finds ordered-pair solutions (for example, $y = 2x$).
2. given the graph of a line, identifies the slope of the line (including the slope of vertical and horizontal lines).
3. given the graph of a linear relationship, applies and explains the simple properties of lines on a graph, including parallelism, perpendicularity, and identifying the x and y intercepts, the midpoint of a horizontal or vertical line segment, and the intersection point of two lines.

FlyBy Math™ Activities

--Represent distance, speed, and time relationship for constant speed cases using linear equations and a Cartesian coordinate system.

--Interpret the slope of a line in the context of a distance-rate-time problem.

--Apply mathematics to predict and analyze aircraft conflicts and validate through experimentation.

Strand D. Algebraic Thinking

Standard 1: The student describes, analyzes, and generalizes a wide variety of patterns, relations, and functions.

Benchmark MA.D.1.3.1: The student describes a wide variety of patterns, relationships, and functions through models, such as manipulatives, tables, graphs, expressions, equations, and inequalities.

Grade Level Expectations: Sixth

The student:

5. describes relationships and patterns using words, tables, symbols, variables, expressions, or equations.

FlyBy Math™ Activities

--Represent distance, speed, and time relationship for constant speed cases using tables, bar graphs, line graphs, equations, and a Cartesian coordinate system.

--Use tables, bar graphs, line graphs, equations, and a Cartesian coordinate system to draw conclusions.

Grade Level Expectations: Seventh

The student:

1. uses manipulatives and graphic materials to generate tables and charts (for example, input, output) to develop algebraic expressions, equations, or formulas.

FlyBy Math™ Activities

--Represent distance, speed, and time relationship for constant speed cases using tables, bar graphs, line graphs, equations, and a Cartesian coordinate system.

--Use tables, bar graphs, line graphs, equations, and a Cartesian coordinate system to draw conclusions.

<p>Grade Level Expectations: Eighth The student:</p> <ol style="list-style-type: none"> 1. reads, analyzes, and describes graphs of linear relationships. 2. uses variables to represent unknown quantities in real-world problems. 3. uses the information provided in a table, graph, or rule to determine if a function is linear and justifies reasoning. 5. predicts outcomes based upon function rules. 	<p>FlyBy Math™ Activities</p> <p>--Represent distance, speed, and time relationship for constant speed cases using linear equations and a Cartesian coordinate system.</p> <p>--Use tables, bar graphs, line graphs, equations, and a Cartesian coordinate system to draw conclusions.</p> <p>--Predict the relative motion of two airplanes on given paths</p> <p>--Explain and justify solutions regarding the motion of two airplanes using the results of plotting points on a schematic of a jet route, on a vertical line graph, and on a Cartesian coordinate system.</p>
<p><i>Benchmark MA.D.1.3.2: The student creates and interprets tables, graphs, equations, and verbal descriptions to explain cause-and-effect relationships.</i></p>	
<p>Grade Level Expectations: Sixth The student:</p> <ol style="list-style-type: none"> 1. interprets and creates function tables and graphs (first quadrant). 2. substitutes values for variables in expressions and describes the results or patterns observed. 3. graphs (first quadrant) functions from function tables to explain cause-and-effect relationships. 	<p>FlyBy Math™ Activities</p> <p>--Represent distance, speed, and time relationship for constant speed cases using tables, bar graphs, line graphs, equations, and a Cartesian coordinate system.</p> <p>--Use tables, bar graphs, line graphs, a Cartesian coordinate system, and equations to model aircraft conflicts and predict outcomes.</p> <p>--Explain and justify solutions regarding the motion of two airplanes using the results of plotting points on a schematic of a jet route, on a vertical line graph, and on a Cartesian coordinate system.</p>
<p>Grade Level Expectations: Seventh The student:</p> <ol style="list-style-type: none"> 1. interprets and creates tables, function tables, and graphs (all four quadrants). 2. writes expressions and equations to describe relationships. 3. graphs equations to explain cause-and-effect relationships. 	<p>FlyBy Math™ Activities</p> <p>--Represent distance, speed, and time relationship for constant speed cases using tables, bar graphs, line graphs, equations, and a Cartesian coordinate system.</p> <p>--Use tables, bar graphs, line graphs, a Cartesian coordinate system, and equations to model aircraft conflicts and predict outcomes.</p> <p>--Explain and justify solutions regarding the motion of two airplanes using the results of plotting points on a schematic of a jet route, on a vertical line graph, and on a Cartesian coordinate system.</p>
<p>Grade Level Expectations: Eighth The student:</p> <ol style="list-style-type: none"> 1. interprets and creates tables and graphs (function tables). 2. writes equations and inequalities to express relationships. 3. graphs equations and inequalities to explain cause- 	<p>FlyBy Math™ Activities</p> <p>--Represent distance, speed, and time relationship for constant speed cases using tables, bar graphs, line graphs, equations, and a Cartesian coordinate system.</p> <p>--Use tables, bar graphs, line graphs, a Cartesian</p>

<p>and-effect relationships.</p> <p>4. interprets the meaning of the slope of a line from a graph depicting a real-world situation.</p>	<p>coordinate system, and equations to model aircraft conflicts and predict outcomes.</p> <p>--Explain and justify solutions regarding the motion of two airplanes using the results of plotting points on a schematic of a jet route, on a vertical line graph, and on a Cartesian coordinate system.</p> <p>--Interpret the slope of a line in the context of a distance-rate-time problem.</p>
<p>Standard 2: The student uses expressions, equations, inequalities, graphs, and formulas to represent and interpret situations.</p>	
<p><i>Benchmark MA.D.2.3.1: The student represents and solves real-world problems graphically, with algebraic expressions, equations, and inequalities.</i></p>	
<p>Grade Level Expectations: Sixth</p> <p>The student:</p> <p>3. translates simple algebraic expressions, equations or formulas representing real-world relationships into verbal expressions or sentences.</p>	<p>FlyBy Math™ Activities</p> <p>--Represent distance, speed, and time relationship for constant speed cases using linear equations and a Cartesian coordinate system.</p> <p>--Use tables, bar graphs, line graphs, a Cartesian coordinate system, and equations to model aircraft conflicts and predict outcomes.</p>
<p>Grade Level Expectations: Seventh</p> <p>The student:</p> <p>2. translates algebraic expressions, equations, or formulas representing real-world relationships into verbal expressions or sentences.</p> <p>3. given an algebraic equation or expression of a real-world application, substitutes integral values for variables and simplifies the results.</p> <p>6. graphs linear equations on the coordinate plane from a table of values.</p>	<p>FlyBy Math™ Activities</p> <p>--Represent distance, speed, and time relationship for constant speed cases using linear equations and a Cartesian coordinate system.</p> <p>--Use tables, bar graphs, line graphs, a Cartesian coordinate system, and equations to model aircraft conflicts and predict outcomes.</p> <p>--Apply mathematics to solving distance, rate, and time problems for aircraft conflict scenarios.</p>
<p>Grade Level Expectations: Eighth</p> <p>The student:</p> <p>2. translates algebraic expressions, equations, or inequalities representing real-world relationships into verbal expressions or sentences.</p> <p>4. graphs linear equations on the coordinate plane using tables of values.</p> <p>5. graphically displays real-world situations represented by algebraic equations or inequalities.</p> <p>7. simplifies algebraic expressions that represent real-world situations by combining like terms and applying the properties of real numbers.</p>	<p>FlyBy Math™ Activities</p> <p>--Represent distance, speed, and time relationship for constant speed cases using linear equations and a Cartesian coordinate system.</p> <p>--Use tables, bar graphs, line graphs, a Cartesian coordinate system, and equations to model aircraft conflicts and predict outcomes.</p> <p>--Apply mathematics to solving distance, rate, and time problems for aircraft conflict scenarios.</p>

<p><i>Benchmark MA.D.2.3.2: The student uses algebraic problem-solving strategies to solve real-world problems involving linear equations and inequalities.</i></p>	
<p>Grade Level Expectations: Sixth The student:</p> <ol style="list-style-type: none"> 1. knows how to solve simple equations representing real-world situations, using pictures, models, manipulatives (such as algebra tiles), or other strategies. 2. uses concrete materials to solve equations and inequalities and explains reasoning orally or in writing. 	<p><i>FlyBy Math™</i> Activities</p> <p>--Represent distance, speed, and time relationship for constant speed cases using tables, bar graphs, line graphs, equations, and a Cartesian coordinate system.</p> <p>--Use tables, bar graphs, line graphs, a Cartesian coordinate system, and equations to model aircraft conflicts and predict outcomes.</p> <p>--Explain and justify solutions regarding the motion of two airplanes using the results of plotting points on a schematic of a jet route, on a vertical line graph, and on a Cartesian coordinate system.</p>
<p>Grade Level Expectations: Seventh The student:</p> <ol style="list-style-type: none"> 1. knows how to solve linear equations and inequalities representing real-world situations, using pictures, models, manipulatives (such as algebra tiles), or other strategies. 	<p><i>FlyBy Math™</i> Activities</p> <p>--Represent distance, speed, and time relationship for constant speed cases using linear equations and a Cartesian coordinate system.</p> <p>--Use tables, bar graphs, line graphs, a Cartesian coordinate system, and equations to model aircraft conflicts and predict outcomes.</p> <p>--Explain and justify solutions regarding the motion of two airplanes using the results of plotting points on a schematic of a jet route, on a vertical line graph, and on a Cartesian coordinate system.</p>
<p>Grade Level Expectations: Eighth The student:</p> <ol style="list-style-type: none"> 1. simplifies algebraic expressions with a maximum of two variables. 2. solves single- and multi-step linear equations and inequalities that represent real-world situations. 	<p><i>FlyBy Math™</i> Activities</p> <p>-- Compare airspace scenarios for both the same and different starting conditions and the same and different rates.</p> <p>--Explain and justify solutions regarding the motion of two airplanes using the results of plotting points on a schematic of a jet route, on a vertical line graph, and on a Cartesian coordinate system.</p>

Strand E: Data Analysis and Probability

Standard 1: The student understands and uses the tools of data analysis for managing information.

Benchmark MA.E.1.3.1: The student collects, organizes, and displays data in a variety of forms, including tables, line graphs, charts, bar graphs, to determine how different ways of presenting data can lead to different interpretations.

Grade Level Expectations: Sixth

The student:

4. constructs, interprets, and explains displays of data, such as tables and graphs (single- and multiple-bar graphs and single- and multiple- line graphs).

***FlyBy Math™* Activities**

----Explain and justify solutions regarding the motion of two airplanes using the results of plotting points on a schematic of a jet route, on a vertical line graph, and on a Cartesian coordinate system.

Grade Level Expectations: Seventh

The student:

3. constructs, interprets, and explains displays of data, such as tables and graphs (circle graphs, single- and multiple- bar graphs, and single and multiple-line graphs) and explains how different displays of data lead to different interpretations.

***FlyBy Math™* Activities**

--Explain and justify solutions regarding the motion of two airplanes using the results of plotting points on a schematic of a jet route, on a vertical line graph, and on a Cartesian coordinate system.

Grade Level Expectations: Eighth

The student:

1. reads and interprets data displayed in a variety of forms including histograms.

***FlyBy Math™* Activities**

--Explain and justify solutions regarding the motion of two airplanes using the results of plotting points on a schematic of a jet route, on a vertical line graph, and on a Cartesian coordinate system.